STATE OF ARIZONA
AQUIFER PROTECTION PERMIT NO. P- 101546
PLACE ID 133193, LTF None

1.0 AUTHORIZATION

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Articles 1, 2 and 3, Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 1 and 2, A. A. C. Title 18, Chapter 11, Article 4 and amendments thereto, and the conditions set forth in this permit, BHP Copper Incorporated is hereby authorized to operate the Pinto Valley Operations, Miami Unit, in Gila County, over groundwater of the Pinal Creek /Salt River Basin, in Sections 24 and 25, Township 1 North, Range 14 East; and Sections 19 and 30, Township 1 North, Range 15 East of the Gila and Salt River Base Line and Meridian.

This permit becomes effective on the date of the Water Quality Division Directors signature and shall be valid for the life of the facility (operational, closure, and post-closure periods), unless suspended or revoked pursuant to A.A.C. R18-9-A213. The permittee shall construct, operate and maintain the permitted facilities:

1. Following all the conditions of this permit including the design and operational information documented or referenced below, and
2. Such that Aquifer Water Quality Standards (AWQS) are not violated at the applicable point(s) of compliance (POC) set forth below, or if an AWQS for a pollutant has been exceeded in an aquifer at the time of permit issuance, that no additional degradation of the aquifer relative to that pollutant, and as determined at the applicable POC, occurs as a result of the discharge from the facility.

1.1 PERMITTEE INFORMATION

Facility Name: BHP Copper Inc., Miami Unit

Permittee:	**Mailing Address:**	**Facility Street Address:**
BHP Copper Inc.	BHP Copper Inc. Pinto Valley Operations P.O. Box 100 Miami, AZ 85539	Highway 60/70 Miami, AZ 85539
Facility Contact:	Mr. Wayne A. Fuller Senior Environmental Engineer	(928) 473-6450

Emergency Telephone Number: (928) 473-6450

Latitude: 33º 24’ 29” N **Longitude:** 110° 52’ 12” W

Legal Description: Sections 24 and 25, Township 1 North, Range 14 East; and Sections 19 and 30, Township 1 North, Range 15 East of the Gila and Salt River Base Line and Meridian.

1.2 AUTHORIZING SIGNATURE

_____

Joan Card, Director
Water Quality Division
Arizona Department of Environmental Quality
Signed this _____day of _____, 2008

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2.0 SPECIFIC CONDITIONS [A.R.S. §§ 49-203(4), 49-241(A)]

2.1 Facility / Site Description[A.R.S. § 49-243(K) (8)]

The BHP Copper, Inc., Miami Unit is located in Southern Gila County, along State Highway 60, adjacent to the town of Miami, Arizona and to the Freeport McMoran Miami Mining Operations to the North. The 700 acre site consists of an in-situ leaching area and a solvent extraction-electrowinning (SX-EW) plant that produces refined copper cathodes from the leaching operations.

The approximately 168 acre in-situ operation produces copper by acid-treating material remaining from historic underground mining of a large, disseminated copper ore body in which copper minerals have naturally been dissolved and reprecipitated in readily soluble form by a long history of weathering. The Miami Copper Company began developing the underground mine in 1909 with production continuing by conventional underground mining methods until 1959. With the depletion of the ore body, leaching of the abandoned underground workings and former block caved zones of low grade chalcocite and chalcopyrite began in 1941 and continues today. Typically, approximately 1,600 injection wells are used at one time and generally about 20 new injection wells are installed each month. Total solution contained within the in situ leaching area was estimated at 4.87 billion gallons or approximately 15,000 acre-feet. In addition to approximately 5,800 gpm of raffinate applied to the in situ area the area also receives approximately 100 gpm of seepage from the adjacent TJ pit and stormwater. Leaching operations are expected to continue until approximately the year 2036.

The Miami Unit No. 2 Tailings Reprocessing Project was permitted under Groundwater Protection Permit No. G-0008-04 in 1988. Approximately 38 million tons of mill tailings were placed in the Miami Unit No. 2 Tailings Facility between 1911 and 1934. The tailings were reprocessed using hydraulic mining methods from 1988 to 2001. When active, hydraulic mining methods produced a slurry of tailings and acidic mining solution. Additional sulfuric acid was added to the slurry to dissolve the copper contained therein. The resulting PLS was processed through the Miami Unit's SX/EW plant, which included a PLS Pond. The remaining tailings after reprocessing were transported through an overland pipeline and deposited in the Copper Cities Deep Pit Tailings Repository, a facility permitted by a separate APP, (APP #101888). The overland pipeline from the Copper Cities Deep Pit Tailings Repository returns reclaimed water to the BHP Miami Unit to use in the in-situ leach process area. The Copper Cities Deep Pit Tailings Repository also serves as storage for excess leach solution from the Miami Unit.

The site has three stormwater discharge points which are permitted under Multi-Sector General Permit AZRO5B545.

The site includes the following discharging facilities:

TABLE 2.1.1 Discharging Facilities

Discharging Facility	Latitude	Longitude
Canyon Tailings Pond	33º 24' 23.1" N	110º 52' 15.5" W
PLS Pond	33º 24' 20.1" N	110º 52' 19.4" W
In Situ Leach Area *	33º 24' 25.4" N	110º 52' 29.8" W
Boundary Ore Sump	33º 24' 29.1" N	110º 52' 12.7" W
SX/EW Spill Containment Pond	33º 24' 6.3" N	110º 52' 0.9" W
Catchment Basin 3	33º 24' 49.1" N	110º 52' 5.6" W
Spill Containment Pond 1	33º 24' 9.1" N	110º 52' 0.9" W
Spill Containment Pond 3	Need	Need
Spill Containment Pond 4	33º 24' 39.1" N	110º 55' 10.0" W
Spill Containment Pond 5	33º 24' 49.1" N	110º 52' 5.6" W

- The In-Situ Leach area consists of the TJ Pit including rubble leach zones, over one thousand injection wells, four extraction wells, an extraction shaft (No 5 Shaft), a waste rock pile, leach dumps, the In-Situ Pond, North In-Situ Pond, Southeast In-Situ Leach Pond, and the Boundary Pond.

2.1.1 Canyon Tailings Pond

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The facility is an existing unlined tailings impoundment, covering approximately 4.5 acres of land surface (elongated depression) overlying Gila. The impoundment is partially filled with tailings/water and stormwater, and captures seepage and spills from the overland pipeline pumps, thickeners and PLS Pond**.** To minimize discharge, a 48 –inch diameter culvert is installed near the bottom of the impoundment that drains the accumulated fluid into the In-Situ Leach Area.

2.1.2 PLS Pond

The facility is a PLS impoundment, considered to be a new facility constructed in 1988, that receives up to 7,000 gpm PLS from the In-Situ Leach Area through No. 5 Shaft, TJ Pit employing barge pumps, and three recovery wells. The facility also occasionally receives small volumes of electrolyte purchased from outside sources for its acid and copper content. The PLS collected in the impoundment is pumped to the SX-EW Plant through HDPE pipelines. The impoundment has a total fluid storage capacity of approximately 2.16 million gallons.

The PLS Pond is considered a New Facility, however it does not meet the requirements of New Facility BADCT.

2.1.3 In-Situ Leach Area

The facility is an existing in-situ leaching area, approximately 168 acres, containing oxide and chalcocite capping of the original underground workings. Raffinate is injected into the caved area through a series of wells (typically 6-inch diameter injection wells with 1¼ -inch PVC pipe for fluid injection) ranging from 50 feet to over 500 feet in depth. The injection wells of the Miami In-Situ Project mining operation are Class V wells, pursuant to the federal underground injection control (UIC) regulations under 40 C.F.R. 144.6(c)(2) and 144.81(12). The Class V injection well designation can include wells used for solution mining of an ore body that was previously mined by conventional `means. The leachate collected from more than 30 miles of old workings is recovered from the No. 5 Shaft and four extraction wells and is pumped to the PLS Pond. The No 5 Shaft is a concrete lined shaft that collects PLS from the subsidence zone. Two submersible pumps are currently installed just below the 720-foot level to pump the PLS out of the No. 5 Shaft at the rate of approximately 2,700 gpm. The shaft, (15 feet x 15 feet enlarged to 18 feet x 18 feet at 1,200 feet below collar) is more than 3,400 feet deep. The extraction wells MC-9503, MIL01, MIL02 and DH-719 are located adjacent to the TJ Pit and typically extract solutions from a depth of approximately 1,000 feet below ground surface. Solutions are also pumped from barge pumps located within the TJ Pit, a part of the in-situ leaching area. The solution contained within the in-situ leach area was estimated at 4.870 billion gallons (BHP 1994).

2.1.4 Boundary Ore Sump[1] (Raffinate Sump[1])

The facility is an existing raffinate impoundment consisting of a rectangular concrete vessel constructed below grade and is located directly over a caved area. The impoundment has a fluid storage capacity of approximately 2,200 gallons and is open-ended on top. The rate of inflow and outflow through the impoundment is approximately 3,700 gpm. This facility is potentially exempt and therefore the Compliance Schedule requires an inspection to verify its exempt status. It will be removed from the permit if it complies with the exemption requirements.

2.1.5 SX-EW Plant Spill Containment Pond (Non-stormwater Impoundment)

The facility is an existing non-stormwater impoundment, built in a partially excavated and dammed drainageway to capture spills and stormwater runoff from the SX-EW facility via several drains. The facility has fluid storage capacity of approximately 1.65 acre-feet below the spillway. The facility has been upgraded with a new liner system. The upgraded facility is designed with an emergency overflow stainless steel pipe to direct flow, by gravity, to the 320 Adit connecting to the In-situ Leaching Area.

2.1.6 Catchment No. 3 (Non-stormwater Impoundment)

1 The term Sump is used in this case as the name of the facility and not as a description of its function.

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The facility is an existing non-stormwater impoundment, constructed by excavating on-site tailings, and using development rock and native material (Gila conglomerate) for construction. The impoundment has an approximate storage capacity of 3 acre-feet The facility has an excavated outlet channel 45 feet long x 8 feet wide x 7 feet deep. The outlet channel discharges to a 15 feet wide contour ditch which empties into No. 2 Tailings Hydraulic Mining Area. The facility is designed to collect stormwater runoff from the Office/Red Barn Area, discharge from the truck washes, septic system discharge within offices and surface flows from upgradient sources.

2.1.7 Spill Containment Ponds No's. 1, 3, 4 and 5

The Spill Containment Ponds are existing facilities adjacent to the pipeline extending 25,000 feet from the No. 2 Tailings thickeners at the Miami Unit to the Copper Cities Deep Pit Tailings Repository and delivering tailings slurry and/or solutions at a maximum rate of 3,000 gpm between the Miami Unit and the Copper Cities property. There are three pipelines installed in the same corridor which gains 200 feet in elevation from the Miami Unit to the repository. Spill Containment Ponds Nos. 1, 3, 4 and 5 are lined with 60-mil HDPE liners. Spill Containment Pond No. 3 was considered to be redundant and was removed from service in the mid 1990s. The remaining active spill containment ponds are designed to serve as retention ponds in the event of operational leaks or upsets in the pipelines.

Annual Registration Fee [A.R.S. §49-242(D)]

The Annual Registration Fee for this permit is established by A.R.S. **§** 49-242(D) and is payable to ADEQ each year. The design flow is 10,000,000 gpd.

Financial Capability [A.R.S. §49-243(N) and A.A.C. R18-9-A203]

The permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee shall maintain financial capability throughout the life of the facility. The estimated dollar amount demonstrated for closure and post-closure costs is $5,035,298. The financial assurance mechanism was demonstrated under A.A.C. R18-9-A203 (C)(1) through self-assurance.

2.2 Best Available Demonstrated Control Technology [A.R.S. §49-243(B) and A.A.C. R18-9-A202 (A) (5)]

1. **In-Situ Mine Area**

BADCT Demonstration for the In-Situ Leaching Area

The permittee shall submit to ADEQ's Ground Water Section, APP and Drywell Unit a BADCT demonstration for the In-Situ Leaching and subsidence area. The demonstration shall consist of a series of work plans and reports set forth in the Compliance Schedule, Section 3.0. The objective is to demonstrate hydrologic control over the water table to effectively capture acidic leach solution from the injection zone and to define the Pollutant Management Area (vertical and lateral boundaries) for the in-situ leaching area, including the subsidence area and near the No 5 Shaft. The BADCT demonstration for the insitu leaching area shall consist of a groundwater flow and transport model which evaluates aquifer capture zone. The conceptual model of the hydrogeologic system shall include a detailed water balance, the identification of hydrostratigraphic units, the system boundaries, the assigned aquifer parameters, and the hydrologic stresses on the system. The migration pathways of local faults and their effect on recovery of leach solution, groundwater elevations, groundwater flow directions, and groundwater quality in the Gila Conglomerate and bedrock aquifers shall also be evaluated. The permittee is required to submit a Groundwater Modeling Workplan for ADEQ review within three months of permit issuance. Based on the results provided in Groundwater Modeling Report, the permittee is required to submit a proposed network of piezometers and a Water Level Monitoring Plan.

2.2.1 Engineering Design

The facilities list, with BADCT descriptions, is located in Section 4.1, Table 4.1.1.

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2.2.2 Site-specific Characteristics
Not Applicable

2.2.3 Pre-Operational Requirements
Not Applicable

2.2.4 Operational Requirements
Permitted facilities shall be inspected for performance levels listed in Section 4, Table 4.2.1. Results of these inspections and monitoring activities shall be documented and maintained at the mine location for at least 10 years, and as required by Section 2.7.2 of this permit.

If during an inspection damage is identified that could cause or contribute to a discharge, proper repairs shall be promptly performed.

In accordance with A.R.S. § 49-243 (P) (3), the injection wells are permitted as part of the area wide BADCT demonstration for the in-situ leaching area. The injection wells are designed and authorized to inject acidic leach solution into the subsurface vadose zone within the in-situ leaching area. Over one thousand operating wells exist at any given time and are periodically moved to different locations to achieve maximum leaching potential. The injection wells are not permitted as separate APP facilities given that the following conditions are met: all injection wells are confined within the limits of Pollutant Management Area of the in-situ leaching area, and all injection wells are located within the hydrologic capture zone of the extracted leach solution.

2.3 Discharge Limitations [A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205 (B)]
The permittee shall operate and maintain all permitted facilities listed below to prevent unauthorized discharges pursuant to A.R.S. §§ 49-201(12) resulting from failure or bypassing of BADCT pollutant control technologies including liner failure[2], uncontrollable leakage, overtopping (e.g., exceeding the maximum storage capacity, defined as a fluid level exceeding the crest elevation of a permitted impoundment), berm breaches that result in an unexpected loss of fluid, accidental spills, or other unauthorized discharges. The discharge limitations in this section are not applicable to any discharge caused by precipitation in excess of a single 100-year,24 hour storm event or process overflow during a power outage exceeding 24 hours in duration.

2.3.1 Process Solution Impoundments
The PLS Pond and the Boundary Ore Sump are designed and authorized to receive pregnant leach solution, raffinate, stormwater, and process upset events. The permittee shall maintain these impoundments to ensure that there are no liner failures, uncontrollable leaks, overtopping, berm breaches, accidental spills, or other unauthorized discharges into the environment. The PLS Ponds and Impoundments shall be operated to maintain appropriate freeboard, and the maximum storage capacity shall not be exceeded.

2.3.2 Non-Stormwater Impoundments
The non-stormwater impoundments, SX-EW Plant Spill Containment Pond and Catchment No. 3, shall be maintained to ensure that there are no liner failures, uncontrollable leaks, overtopping, berm breaches, accidental spills, or other unauthorized discharges. These impoundments are authorized to receive stormwater run-off and run-on, and process solutions from upsets which shall only be held for 30 days or less. Appropriate freeboard shall be maintained, and the maximum storage capacity shall not be exceeded.

2.3.3 In-Situ Leach Area
Hydraulic control over the injected solutions shall be maintained in the in-situ mine during the

2 Liner failure in a single-lined impoundment is any condition that would result in leakage exceeding 550 gallons per day per acre.

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operating life of the mine. The rate of injection and recovery shall be monitored and controlled so that an inward hydraulic gradient is constantly maintained at the No. 5 Shaft, the extraction wells and the TJ Pit. Additional BADCT demonstrations for the In-Situ Leaching Area is required under subsection 2.2 and in Section 3 of the Compliance Schedule.

2.4 Point(s) of Compliance (P.O.C.) [A.R.S. § 49-244]

The Points of Compliance are established by the following monitoring locations:

Table 2.4.1 POC Locations

Well ID	Latitude	Longitude
POC-1	TBD	TBD
MU-955*	Need	Need
MU-962*	Need	Need
MU-957*	Need	Need

- Groundwater wells MU-955, MU-962, and MU-957 are required to monitor boundaries of the in-situ leaching area, however, additional POCs in the Gila Conglomerate and bedrock aquifers may be designated and amended into this permit, based on the results of the BADCT demonstration referenced in Section 2.2.1.A and Section 3, Compliance Schedule.

Monitoring requirements for each of the P.O.C. wells are listed in Section 4.2, Tables 4.2.3, 4.2.4 through 4.2.5.

The Director may amend this permit to designate additional points of compliance if information on groundwater gradients, quality, or groundwater usage indicates the need.

2.5 Monitoring Requirements [A.R.S. §49-243(K) (1), A.A.C. R18-9-A206 (A)]

All monitoring required in this permit shall continue for the duration of the permit, regardless of the status of the facility. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and chain of custody procedures shall be followed, in accordance with currently accepted standards of professional practice. The permittee shall consult the most recent version of the ADEQ Quality Assurance Project Plan (QAPP) and EPA 40 CFR PART 136 for guidance in this regard. Copies of laboratory analyses and chain of custody forms shall be maintained at the permitted facility. Upon request these documents shall be made immediately available for review by ADEQ personnel.

2.5.1 Discharge Monitoring

The permittee shall collect a representative fluid sample from Catchment 3 in accordance with Section 3.0, Compliance Schedule. The fluid samples shall be analyzed for the constituents located in Table 4.2.3.

The results of the discharge monitoring shall be submitted to the Ground Water Section, APP and Drywell Unit, within 90 days of the issuance of the permit for review

2.5.2 Facility / Operational Monitoring

The operational monitoring requirements for the facilities referenced in Section 4.1, Table 4.1.1 are listed in Section 4, Table 4.2.1.

2.5.3 Groundwater Monitoring and Sampling Protocols

2.5.3.1 Groundwater Sampling Protocols

Static water levels shall be measured and recorded prior to sampling. Wells shall be purged

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of at least three borehole volumes (as calculated using the static water level) or until indicator parameters (pH, temperature, conductivity) are stable, whichever represents the greater volume. If evacuation results in the well going dry, the well shall be allowed to recover to 80% of the original borehole volume, or for 24 hours, whichever is shorter, prior to sampling. If after 24 hours there is not sufficient water for sampling, the well shall be recorded as DRY for the monitoring event. An explanation for reduced pumping volumes, a record of the volume pumped, and modified sampling procedures shall be reported and submitted with the Self Monitoring Report Form (SMRF).

The permittee may conduct the sampling using the low-flow purging method as described in the Arizona Water Resources Research Center, March 1995 *Field Manual for Water Quality Sampling*. The well must be purged until indicator parameters stabilize. Indicator parameters shall include dissolved oxygen, turbidity, pH, temperature, and conductivity.

2.5.3.2 POC Well Installation

Four monitor wells designated as POC wells are listed in Section 2.4.1. Three of the POC wells, MU-955, MU-962 and MU-957 are currently installed at the facility. The remaining POC well, POC-1 will require new installation approximately 200 feet down gradient of the SX/EW spill containment pond. POC-1 must be installed within four months from the issuance date of this permit, as required in the compliance schedule, Section 3.0. The POC well must be constructed to monitor groundwater quality in the Gila Conglomerate aquifer down gradient from the SX/EW Spill Containment Pond. Detailed geologic and well construction logs for each well must be submitted to the ADEQ Ground Water Section, APP and Drywell Unit within 60 days of well installation. Where identification is possible, the logs should note the depth at which groundwater is first encountered in each well. If a well screen greater than sixty (60) feet is necessary, the permittee shall provide justification to and obtain approval from GWS-APPDWU prior to installation. Additional POC(s) may be required to be installed along the boundaries of the in-situ leaching area. The need for the installation of additional POCs will be determined through the BADCT Demonstration referenced in Section 2.2.1.A and Section 3, Compliance Schedule.

2.5.3.3 Ambient Groundwater Quality Monitoring for POC

Eight (8) consecutive months of groundwater sampling must be completed to establish existing ambient groundwater quality conditions for evaluating any short-term or long-term changes in water quality at POC-1, MU-955, MU-957, and MU-962. Each ambient groundwater sample shall be analyzed for the parameters listed in Section 4.2, Tables 4.2.3, 4.2.4 and 4.2.5.

2.5.3.4 Alert Levels (ALs) for POC Wells

ALs shall be calculated for all contaminants with an established numeric AWQS at the designated POCs. The AL and AQL for each parameter for which the eight (8) monthly rounds of ambient samples have been completed, are listed in Section 4.2, Tables 4.2.3, 4.2.4, and 4.2.5.

Where ambient sampling is required, within ninety (90) days of the receipt of the laboratory analyses for the final quarter or month of the ambient groundwater monitoring period for each POC well referenced in Section 2.4, Table 2.4.1 the permittee shall submit the ambient groundwater data in tabulated form to the GWS-APPDWU for review. Copies of all laboratory analytical reports, field notes, and the Quality Assurance/Quality Control (QA/QC) procedures used in collection and analyses of the samples for all parameters listed in Section 4.2, Tables 4..2.3 , 4.2.4, and 4.2.5 to be established for each POC well, shall be submitted to the GWS-APPDWU. The permittee may submit a report with the calculations for each AL and AQL included in the permit for review and approval by ADEQ, or the permittee may defer calculation of the ALs and AQLs by the GWS-APPDWU. The ALs

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shall be established and calculated by the following formula, or another statistically valid method submitted to GWS-APPDWU in writing and approved for this permit by the GWS-APPDWU:

$AL = 0 + K\Phi$

Where 0 = mean, Φ = standard deviation, and K = one-sided normal tolerance interval with a 95% confidence level (Lieberman, G.J. (1958) Tables for One-sided Statistical Tolerance Limits: Industrial Quality Control, Vol. XIV, No. 10). Obvious outliers should be excluded from the data used in the AL calculation.

The following criteria shall be met in establishing ALs in the permit:

1. The AL shall be calculated for a parameter using the analyses from a minimum of eight (8) consecutive sample events. The permittee shall not use more than twelve (12) sample rounds in the calculation of a parameter.
2. Any data where the PQL exceeds 80% of the AWQS shall not be included in the AL calculation.
3. If a parameter is below the detection limit, the permittee must report the value as "less than" the numeric value for the PQL or detection limit for the parameter, not just as "non-detect". For those parameters, the permittee shall use a value of one-half the reported detection limit for the AL calculation.
4. If the analytical results from more than 50% of the samples for a specific parameter are non-detect, then the AL shall be set at 80% of the AWQS and the AQL at the AWQS.

2.5.3.5 Aquifer Quality Limits for POC-1, MU-955, MU-957 and MU-962

For each of the monitored analytes for which a numeric AWQS has been adopted, the AQL shall be established as follows:

1. If the calculated AL is less than the AWQS, then the AQL shall be set equal to the AWQS.
2. If the calculated AL is greater than the AWQS, then the AQL shall be set equal to the calculated AL value, and no AL shall be set for that constituent at the monitoring point.

2.5.3.6 Compliance Groundwater Quality Monitoring for POC-1, MU-955, MU-957 and MU-962

Quarterly compliance groundwater monitoring in each POC shall commence within the first calendar quarter after completion of the ambient groundwater sampling period. The parameters to be analyzed for quarterly compliance monitoring are listed in Section 4, Tables 4.2.3 and 4.2.4. In addition to quarterly compliance groundwater monitoring for parameters listed in Section 4, Table 4.2.4 for POC wells; an extended list of parameters shall be monitored at each POC well once every two (2) years (biennial). For the biennial monitoring events, the parameters listed in Section 4, Table 4.2.5 shall be analyzed. The biennial sampling event shall replace the regularly scheduled quarterly sampling event.

The permittee may submit a written request to the Ground Water Section, APP and Drywell Unit to reduce the monitoring parameters in either the Quarterly or the Biennial Compliance Groundwater Monitoring Tables (Section 4, Tables 4.2.3, 4.2.4, and 4.2.5) in accordance with the following criteria:

1. The parameter in question has not been detected for at least two (2) consecutive biennial or four (4) consecutive quarterly monitoring periods. The PQL reported by the laboratory shall be less than 80 percent of the established numeric aquifer water quality standard, and shall not be greater than three times the laboratory's method detection limit for that pollutant.

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2. The parameter in question is not detected in the process solution nor is it known to be present or used in the area that is being monitored by the well.
3. The permittee shall submit a written report indicating the parameter(s) proposed for deletion and accompanied by the supporting data, including the laboratory analytical reports and quality assurance/quality control data to the ADEQ GWS-APPDWU for review and approval.
4. Upon review and approval by the ADEQ GWS-APPDWU, the parameter in question may be dropped from the list of monitoring parameters or the respective AQL or AL modified in the permit. The respective changes, if approved, will require a minor amendment to the permit.

2.5.3.7 POC Well Replacement

In the event that one or more of the designated POC wells should become unusable or inaccessible due to damage, insufficient water in the well for more than 2 sampling events, or any other event, a replacement POC well shall be constructed and installed upon approval by ADEQ. If the replacement well is fifty (50) feet or less from the original well, the ALs and/or AQLs calculated for the designated POC well shall apply to the replacement well.

2.5.3.8 Alert Levels for Operational Conditions for the In-Situ Leaching Area

1. Inward Hydrologic Gradient

   The permitted water elevations in the TJ Pit, the extraction wells, No 5 Shaft, and groundwater elevation monitoring wells around the perimeter of the in-situ leaching area, subsidence area and No 5 Shaft, will be amended into this permit and will be based on the information obtained for the BADCT Demonstration listed in Section 2.2.1A and Section 3, Compliance Schedule.

2. Hydrologic Control Over Injected Solution

   The rates of injection and recovery for the in-situ leaching area shall be controlled and monitored so that the volume of solution recovered shall be greater than the volume of solution injected. The in-situ leaching area shall be operated to maintain a hydraulic sink in that area. The detailed water balance, including the rates and volumes will be amended into this permit and will be based on the information obtained for the BADCT Demonstration listed in Section 2.2.1A and Section 3, Compliance Schedule.

   The permittee shall also update the contingency actions listed for Exceeding of Operational Alert Levels for the In-Situ Leaching Area in Section 2.6.2.1.2, based on the BADCT Demonstration.

2.5.4 Surface Water Monitoring and Sampling Protocols

The need to complete surface water monitoring under this permit will be evaluated once the WQARF remediation is complete.

2.5.5 Analytical Methodology

All samples collected for compliance monitoring shall be analyzed using Arizona state approved methods. If no state approved method exists, then any appropriate EPA approved method shall be used. Regardless of the method used, the detection limits must be sufficient to determine compliance with the regulatory limits of the parameters specified in this permit. Analyses shall be performed by a laboratory licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods. A list of Arizona state certified laboratories can be obtained at the address below:

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Arizona Department of Health Services
Office of Laboratory Licensure and Certification
250 North 17th Avenue
Phoenix, AZ 85007
Phone: (602) 364-0720

2.5.6 Installation and Maintenance of Monitoring Equipment

Monitoring equipment required by this permit shall be installed and maintained so that representative samples required by the permit can be collected. If new groundwater wells are determined to be necessary, the construction details shall be submitted to the ADEQ Ground Water Section for approval prior to installation and the permit shall be amended to include any new monitoring points.

2.6 Contingency Plan Requirements
[A.R.S. § 49-243(K) (3), (K) (7) and A.A.C. R18-9-A204 and R18-9-A205]

2.6.1 General Contingency Plan Requirements

At least one copy of the approved contingency and emergency response plan(s) submitted in response to the Compliance Schedule 3.0, shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Any alert level (AL) that is exceeded or any violation of an aquifer quality limit (AQL), discharge limit (DL), or other permit condition shall be reported to ADEQ following the reporting requirements in Section 2.7.3.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling has been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition.

2.6.2 Exceeding of Alert Levels

2.6.2.1 Exceeding of Alert Levels Set for Operational Conditions

1. Performance Levels Set for Freeboard

In the event that freeboard performance levels in a surface impoundment are not maintained, the permittee shall:

a. Immediately cease or reduce discharging to the impoundment to prevent overtopping. Remove and properly dispose or recycle to other operations the excess fluid in the reservoir until the water level is restored at or below the permitted freeboard limit.

b. Within 5 days of discovery, evaluate the cause of the incident and adjust operational conditions as necessary to avoid future occurrences.

c. Record in the facility log, the amount of fluid removed, a description of the removal method, and the disposal arrangements. The facility log shall be maintained

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according to Section 2.7.2 (Operational Inspection/Log Book Recordkeeping). Records documenting each freeboard incident and actions taken to correct the problem shall be included in the current report as required in Section 2.7.1 (Self Monitoring Report Forms).

d. The facility is no longer on alert status once the operational indicator no longer indicates that the freeboard performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

2. Performance Levels, Other Than Freeboard

a. If an operational AL listed in Section 4, Table 4.2.1 has been observed or noted during required inspection and operational monitoring, the permittee shall immediately investigate to determine the cause of the condition. The investigation shall include the following:
   i. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the operational performance condition.
   ii. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences.

b. The AL exceedance, results of the investigation, and any corrective action taken shall be reported to the Water Quality Compliance Section (WQCS), within thirty (30) days of the discovery of the condition. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.

c. The permittee shall initiate actions identified in the approved contingency plan as required by the Compliance Schedule, Section 3 and any specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation which may have led to an AL being exceeded. To implement any other corrective action the permittee shall obtain prior approval from ADEQ according to Section 2.6.6.

2.6.2.1.2 Exceeding of Operational Alert Level for the In-Situ Leaching Area

An operational AL will be set for the water level elevation in the TJ Pit, the No. 5 Shaft, and the extraction wells. The AL will be established through the BADCT Demonstration referenced in Section 2.2.1.A. Additional contingency actions shall be amended into this permit once the operational alert levels are established.

2.6.2.2 Exceeding of Alert Levels Set for Discharge Monitoring

Not applicable.

2.6.2.3 Exceeding of Alert Levels in Groundwater Monitoring

2.6.2.3.1 Alert Levels for Indicator Parameters

Not applicable.

2.6.2.3.2 Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards

1. If an AL for a pollutant set in Section 4, Tables 4.2.3, 4.2.4, or 4.2.5 has been exceeded, the permittee may conduct verification sampling within 5 days of becoming aware of an AL being exceeded. The permittee may use the results of another sample taken between the date of the last sampling event and the

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date of receiving the result as verification.

2. If verification sampling confirms the AL being exceeded or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring to monthly. In addition, the permittee shall immediately initiate an investigation of the cause of the AL being exceeded, including inspection of all discharging units and all related pollution control devices, review of any operational and maintenance practices that might have resulted in an unexpected discharge, review of water balance data for the in-situ leaching area including pumping rates at the extraction wells and No 5 Shaft, evaluation of storm water inflow, BADCT for the PLS Pond, and hydrologic review of groundwater conditions including upgradient water quality.
3. The permittee shall initiate actions identified in the approved contingency plan and specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation which may have led to an AL being exceeded. To implement any other corrective action the permittee shall obtain prior approval from ADEQ according to Section 2.6.6. Alternatively, the permittee may submit a technical demonstration, subject to written approval by the Ground Water Section, that although an AL is exceeded, pollutants are not reasonably expected to cause a violation of an AQL. The demonstration may propose a revised AL or monitoring frequency for approval in writing by the Ground Water Section.
4. Within thirty (30) days after confirmation of an AL being exceeded, the permittee shall submit the laboratory results to the Water Quality Compliance Section, Data Unit along with a summary of the findings of the investigation, the cause of the AL being exceeded, and actions taken to resolve the problem.
5. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
6. The increased monitoring required as a result of ALs being exceeded may be reduced to the regularly scheduled frequency, if the results of three (3) consecutive monthly sequential sampling events demonstrate that no parameters exceed the AL.

2.6.2.3.3 Alert Levels to Protect Downgradient Users from Pollutants Without Numeric Aquifer Water Quality Standards

Not applicable.

2.6.3 Discharge Limitations (DL) Violations

If a DL set in Sections 2.6.3.1, 2.6.3.2 or 2.6.3.3 has been violated, the permittee shall immediately investigate to determine the cause of the violation.

2.6.3.1 Liner Failure, Containment Structure Failure, or Unexpected Loss of Fluid

If there is an unexpected loss of fluid, failure of a containment structure, or leakage through the liner system of a permitted surface impoundment, such that fluids are released to the vadose zone, the permittee shall take the following actions:

1. Immediately cease all non-gravity inflows to the surface impoundment as necessary to prevent any further releases to the environment.
2. Within 24-hours of discovery, notify the ADEQ WQCS.
3. Within five (5) days of discovery of a failure that resulted in a release to the subsurface, collect representative samples of the fluid remaining in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4.2, Table 4.2.3. Within thirty (30) days of the incident, submit a copy of the analytical results to ADEQ

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4. Within fifteen (15) days of discovery, initiate an evaluation to determine the cause for the incident. Identify the circumstances that resulted in the failure and assess the condition of the surface impoundment and liner system. Implement corrective actions as necessary to resolve the problems identified in the evaluation. Initiate repairs to any failed liner, system, structure, or other component as needed to restore proper functioning of the surface impoundment. The permittee shall not resume discharging to the surface impoundment until repairs of any failed liner or structure are performed. Repair procedures, methods, and materials used to restore the system(s) to proper operating condition shall be described in the facility log/recordkeeping file and made available for ADEQ review.
5. Within thirty (30) days of discovery, remove any fluid remaining in the surface impoundment as necessary to prevent further releases to the subsurface and/or to perform repairs. Record in the facility log/recordkeeping file the amount of fluid removed, a description of the removal method, and any disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/Recordkeeping File).
6. Within thirty (30) days of discovery of the incident, submit a report to ADEQ as specified in Section 2.7.3 (Permit Violation and AL Status Reporting). Include a description of the actions performed in subsections 1 through 5 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. Within sixty (60) days of discovery, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident, including geophysical assessment of release to the sub-surface. If soil or groundwater is impacted such that there is a reasonable probability that pollutants will reach an aquifer, submit to ADEQ, for approval, a corrective action plan to address problems identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.
8. Within thirty (30) days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 2.6.6 (Corrective Actions).

2.6.3.2 Overtopping of a Surface Impoundment

If overtopping of fluid from a permitted surface impoundment occurs, the permittee shall:

1. Immediately cease non-gravity inflows to the surface impoundment to prevent any further releases to the environment.
2. Within 24-hours of discovery, notify the ADEQ WQCS.
3. Within five (5) days, collect representative samples of the fluid contained in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4.2, Table 4.2.3. Within thirty (30) days of the incident, submit a copy of the analytical results to the ADEQ WQCS.
4. Within five (5) days of discovery, remove and dispose of or recycle excess fluid in the impoundment until the water level is restored at or below the required freeboard. Record in the facility log, the amount of fluid removed, a description of the removal method, and any disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/Recordkeeping File).
5. Within thirty (30) days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.
6. Within thirty (30) days of discovery of overtopping, submit a report to ADEQ as specified in Section 2.7.3 (Permit Violation and AL Status Reporting). Include a description of the actions performed in subsections 1 through 5 listed above. Upon

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review of the report, ADEQ may request additional monitoring or remedial actions.

7. Within sixty (60) days of discovery, and based on sampling in subsection 3 above, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident.
8. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable POC, submit to ADEQ for approval, a corrective action plan to address problems identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.
9. Within thirty (30) days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 2.6.6 (Corrective Actions).

2.6.3.3 Inflows of Unauthorized Materials to a Surface Impoundment

If any unauthorized materials flow to a permitted surface impoundment, the permittee shall:

1. Immediately cease all unauthorized inflows to the surface impoundment(s).
2. Within 24-hours of discovery, notify the ADEQ WQCS.
3. Within five (5) days of the incident, identify the source of the material and determine the cause for the inflow. Characterize the unauthorized inflow and contents of the affected impoundment, and evaluate the volume and concentration of the inflow to determine if it is compatible with the surface impoundment liner. Based on the evaluation of the incident, repair any systems or equipment and/or adjust operations, as necessary to prevent future occurrences of unauthorized discharges.
4. Within thirty (30) days of an inflow of unauthorized materials, submit a report to ADEQ as specified in Section 2.7.3 (Permit Violation and AL Status Reporting). Include a description of the actions performed in subsections 1 through 3 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
5. Upon review of the report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.

2.6.3.4 Loss of Hydraulic Control at the In-Situ Leaching Area

The permittee shall initiate the following actions within 24 hours of becoming aware of the loss of hydraulic control within the in-situ leaching area for more than 72 consecutive hours. A loss of hydraulic control is indicated by a flat or outward gradient indicated by water level data from observation and recovery wells. The permittee shall:

1. Cease injection in the affected area and or adjust flow rates at injection/recovery wells and/or,
2. Operate the recovery wells and or shaft in the affected area until the amount of fluid recovered is in excess of the amount of fluid injected,
3. Verify proper operations of all facilities within the in-situ leach area,
4. Perform any necessary repairs,
5. Submit a written report within 30 days describing the incident and the corrective actions taken. Upon review of the report, the Department may amend the permit to require additional surface, vadose zone or groundwater monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.

This section shall be amended to include alert levels and a water level monitoring plan once the BADCT demonstration for the in-situ leaching area required under Section 2.2.1.A and Section 3, Compliance Schedule is approved by the GWS-APPDWU. The plan shall include periodic evaluations of water balance data for the in-situ leaching area, the designation of groundwater wells to be monitored, frequency of water elevation measurements, and

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numerical groundwater elevations, as alert levels, assigned to extraction wells, the No. 5 Shaft, the TJ Pit and groundwater elevation monitoring wells on the perimeter of the in-situ leaching area, the subsidence areas, and the No. 5 Shaft.

2.6.4 Aquifer Quality Limit (AQL) Violation in Groundwater Monitor Wells

1. If an AQL set in Section 4.2, Tables 4.2.3, 4.2.4, or 4.2.5 has been exceeded, the permittee may conduct verification sampling within 5 days of becoming aware of an AQL being exceeded. The permittee may use the results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling confirms that the AQL is violated for any parameter or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring to monthly. In addition, the permittee shall immediately initiate an evaluation for the cause of the violation, including inspection of all discharging units and all related pollution control devices, and review of any operational and maintenance practices that might have resulted in unexpected discharge.

   The permittee also shall submit a report according to Section 2.7.3, which includes a summary of the findings of the investigation, the cause of the violation, and actions taken to resolve the problem. A verified exceedance of an AQL will be considered a violation unless the permittee demonstrates within 30 days that the exceedance was not caused or contributed to by pollutants discharged from the facility. Unless the permittee has demonstrated that the exceedance was not caused or contributed to by pollutants discharged from the facility, the permittee shall consider and ADEQ may require corrective action that may include control of the source of discharge, cleanup of affected soil, surface water or groundwater, and mitigation of the impact of pollutants on existing uses of the aquifer. Corrective actions shall either be specifically identified in this permit, included in an ADEQ approved contingency plan, or separately approved according to Section 2.6.6.
3. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
4. The permittee shall notify any downstream or downgradient users who may be directly affected by the discharge.
5. The permittee shall continue monitoring at the increased frequency until the contaminant(s) is below the AQL and AL for three consecutive months.

2.6.5 Emergency Response and Contingency Requirements for Unauthorized Discharges pursuant to A.R.S. § 49-201(12) and pursuant to A.R.S. § 49-241

2.6.5.1 Duty to Respond

The permittee shall act immediately to correct any condition resulting from a discharge pursuant to A.R.S. **§** 49-201(12) if that condition could pose an imminent and substantial endangerment to public health or the environment.

2.6.5.2 Discharge of Hazardous Substances or Toxic Pollutants

In the event of any unauthorized discharge pursuant to A.R.S. **§** 49-201(12) of suspected hazardous substances (A.R.S. **§** 49-201(18)) or toxic pollutants (A.R.S. **§** 49-243(I)) on the facility site, the permittee shall promptly isolate the area and attempt to identify the spilled material. The permittee shall record information, including name, nature of exposure and follow-up medical treatment, if necessary, on persons who may have been exposed during the incident. The permittee shall notify the ADEQ Water Quality Field Service Unit at (602) 771-4620, within 24-hours upon discovering the discharge of hazardous material which: a) has the potential to cause an AWQS or AQL to be exceeded; or b) could pose an endangerment to public health or the environment.

2.6.5.3 Discharge of Non-hazardous Materials

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In the event of any unauthorized discharge pursuant to A.R.S. **§** 49-201(12) of non-hazardous materials from the facility, the permittee shall promptly attempt to cease the discharge and isolate the discharged material. Discharged material shall be removed and the site cleaned up as soon as possible. The permittee shall notify the ADEQ Water Quality Field Service Unit at (602) 771-4620, within 24-hours upon discovering the discharge of non-hazardous material which: a) has the potential to cause an AQL to be exceeded; or b) could pose an endangerment to public health or the environment.

2.6.5.4 Reporting Requirements

The permittee shall submit a written report for any unauthorized discharges reported under Sections 2.6.5.2 and 2.6.5.3 to ADEQ Water Quality Compliance Section at (602) 771-4614, within thirty days of the discharge or as required by subsequent ADEQ action. The report shall summarize the event, including any human exposure, and facility response activities and include all information specified in Section 2.7.3. If a notice is issued by ADEQ subsequent to the discharge notification, any additional information requested in the notice shall also be submitted within the time frame specified in that notice. Upon review of the submitted report, ADEQ may require additional monitoring or corrective actions.

2.6.6 Corrective Actions

Specific contingency measures identified in Section 2.6 have already been approved by ADEQ and do not require written approval to implement.

With the exception of emergency response actions taken under Section 2.6.5, the permittee shall obtain written approval from the Ground Water Section prior to implementing a corrective action to accomplish any of the following goals in response to exceeding an AL or violation of an AQL, DL, or other permit condition:

1. Control of the source of an unauthorized discharge;
2. Soil cleanup;
3. Cleanup of affected surface waters;
4. Cleanup of affected parts of the aquifer;
5. Mitigation to limit the impact of pollutants on existing uses of the aquifer.

Within 30 days of completion of any corrective action, the operator shall submit to the ADEQ Water Quality Compliance Section, a written report describing the causes, impacts, and actions taken to resolve the problem.

2.7 Reporting and Recordkeeping Requirements
[A.R.S. § 49-243(K) (2) and A.A.C. R18-9-A206 (B) and R18-9-A207]

2.7.1 Self Monitoring Report Forms (SMRF)

1. The permittee shall complete the SMRFs provided by ADEQ, and submit them to the Water Quality Compliance Section, Data Unit.
2. The permittee shall complete the SMRF to the extent that the information reported may be entered on the form. If no information is required during a quarter, the permittee shall enter **required** on the SMRF and submit the report to ADEQ. The permittee shall use the format devised by ADEQ.
3. The tables contained in Sections 4.0 list the parameters to be monitored and the frequency for reporting results for groundwater compliance monitoring. Analytical methods shall be recorded on the SMRFs.
4. In addition to the SMRF, the information contained in Section 6.7 shall be included for exceeding an AL or violation of an AQL, DL, or any other permit condition being reported in the current reporting period.

2.7.2 Operation Inspection / Log Book Recordkeeping

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A signed copy of this permit shall be maintained at all times at the location where day-to-day decisions regarding the operation of the facility are made. A log book (paper copies, forms or electronic data) of the inspections and measurements required by this permit shall be maintained at the location where day-to-day decisions are made regarding the operation of the facility. The log book shall be retained for ten years from the date of each inspection, and upon request, the permit and the log book shall be made immediately available for review by ADEQ personnel. The information in the log book shall include, but not be limited to, the following information as applicable:

1. Name of inspector;
2. Date and shift inspection was conducted;
3. Condition of applicable facility components;
4. Any damage or malfunction, and the date and time any repairs were performed;
5. Documentation of sampling date and time;
6. Any other information required by this permit to be entered in the log book, and
7. Monitoring records for each measurement shall comply with R18-9 A206 (B) (2).
8. A notification of the implementation of any additional WQARF remedial Action Plan (RAP) must also be forwarded to the ADEQ GWS/APPDWU, along with a brief summary of the RAP, and a description of any impact to APP permitted facilities or APP permit conditions.

2.7.3 Permit Violation and Alert Level Status Reporting

1. The permittee shall notify the Water Quality Compliance Section in writing within five days (except as provided in Section 2.6.5) of becoming aware of a violation of any permit condition, discharge limitation or of an Alert Level being exceeded.
2. The permittee shall submit a written report to the Water Quality Compliance Section within 30 days of becoming aware of the violation of any permit condition or discharge limitation. The report shall document all of the following:
   a. Identification and description of the permit condition for which there has been a violation and a description of its cause.
   b. The period of violation including exact date(s) and time(s), if known, and the anticipated time period during which the violation is expected to continue.
   c. Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation.
   d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an Aquifer Water Quality Standard.
   e. Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring.
   f. Description of any malfunction or failure of pollution control devices or other equipment or processes.

2.7.4 Operational, Other or Miscellaneous Reporting

The permittee shall submit an annual report which details the operations and monitoring of the TJ Pit and the in-situ leach area. The annual report must be submitted no later than thirty (30) days following the end of the calendar year. The report must include:

1. Hydrographs for the TJ Pit, No. 5 Shaft, extraction wells, groundwater wells used to monitor an inward hydrologic gradient in the in-situ leaching area, and POC wells, including graphical comparisons of head elevations.
2. Groundwater contour maps for each quarterly monitoring period.
3. The laboratory analytical data collected to date in table format from the POCs.
4. Hydrographs for various constituents of concern at the TJ Pit and POCs.
5. Groundwater isopach maps for various constituents of concern.
6. A detailed evaluation and interpretation of the groundwater elevation, groundwater gradient, groundwater quality information collected over time for the site, including the TJ Pit and in-situ leach area.

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7. Copies of the results for groundwater monitoring conducted under WQARF for groundwater monitoring wells MU-293 and MU-281 in table format.

2.7.5 Reporting Location

All SMRFs shall be submitted to:

Arizona Department of Environmental Quality
Water Quality Compliance Section, Data Unit
Mail Code: 5415B-1
1110 W. Washington Street
Phoenix, AZ 85007
Phone (602) 771-4513

All documents required by this permit to be submitted to the Water Quality Compliance Section shall be directed to:

Arizona Department of Environmental Quality
Water Quality Compliance Section
Mail Code: 5415B-1
1110 W. Washington Street
Phoenix, AZ 85007
Phone (602) 771-4614

All documents required by this permit to be submitted to the Ground Water Section shall be directed to:

Arizona Department of Environmental Quality
Ground Water Section
Mail Code: 5415B-3
1110 W. Washington Street
Phoenix, AZ 85007
Phone (602) 771-4428

2.7.6 Reporting Deadline

The following table lists the quarterly report due dates:

Table 2.7.6.1 Quarterly Monitoring Schedule

Monitoring conducted during quarter:	Quarterly Report due by:
January-March	April 30
April-June	July 30
July-September	October 30
October-December	January 30

The following table lists the annual report due date:

Table 2.7.6.2 Annual Monitoring Schedule

Monitoring conducted during year:	Annual Report due by:
January 1st-December 31st	January 30

2.7.7 Changes to Facility Information in Section 1.0

The Ground Water Section and Water Quality Compliance Section shall be notified within 10 days of any change of facility information including Facility Name, Permittee Name, Mailing or Street Address, Facility Contact Person or Emergency Telephone Number.

2.8 Temporary Cessation [A.R.S. § 49-243(K) (8) and A.A.C. R18-9-A209 (A)]

The permittee shall give written notice to the Water Quality Compliance Section before ceasing operation of the

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any facility covered by this permit for a period of 60 days or greater.
At the time of notification the permittee shall submit for ADEQ approval a plan for maintenance of discharge control systems and for monitoring during the period of temporary cessation. Immediately following ADEQs approval, the permittee shall implement the approved plan. If necessary, ADEQ shall amend permit conditions to incorporate conditions to address temporary cessation. During the period of temporary cessation, the permittee shall provide written notice to the Water Quality Compliance Section of the operational status of the facility every three years. If the permittee intends to permanently cease operation of any facility, the permittee shall submit closure notification, as set forth in Section 2.9 below.

2.9 Closure [A.R.S. §49-243(K) (6), 49-252 and A.A.C. R18-9-A209 (B)]
For a facility addressed under this permit, the permittee shall give written notice of closure to the Water Quality Compliance Section of the permittee's intent to cease operation without resuming activity for which the facility was designed or operated.

2.9.1 Closure Plan
Within 90 days following notification of closure, the permittee shall submit for approval to the Ground Water Section, a Closure Plan which meets the requirements of A.R.S. **§** 49-252 and A.A.C. R18-9-A209(B)(1)(a).

If the closure plan achieves clean closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

2.9.2 Closure Completion
Upon completion of closure activities, the permittee shall give written notice to the Ground Water Section indicating that the approved Closure Plan has been implemented fully and providing supporting documentation to demonstrate that clean closure has been achieved (soil sample results, verification sampling results, groundwater data, as applicable). If clean closure has been achieved, ADEQ shall issue a letter of approval to the permittee at that time. If any of the following conditions apply, the permittee shall follow the terms of Post Closure stated in this permit:

1. Clean closure cannot be achieved at the time of closure notification or within one year thereafter under a diligent schedule of closure actions;
2. Further action is necessary to keep the facility in compliance with aquifer water quality standards at the applicable point of compliance;
3. Continued action is required to verify that the closure design has eliminated discharge to the extent intended;
4. Remedial or mitigative measures are necessary to achieve compliance with Title 49, Ch. 2;

2.10 Post-Closure [A.R.S.§§49-243(K) (6), 49-252 and A.A.C. R18-9 A209(C)]
Post-closure requirements shall be established based on a review of facility closure actions and will be subject to review and approval by the Ground Water Section.

In the event clean closure cannot be achieved pursuant to A.R.S. § 49-252, the permittee shall submit for approval to the Ground Water Section a Post-Closure Plan that addresses post-closure maintenance and monitoring actions at the facility. The Post-Closure Plan shall meet all requirements of A.R.S. §§ 49-201(29) and 49-252 and A.A.C. R18-9-A209(C). Upon approval of the Post-Closure Plan, this permit shall be amended or a new permit shall be issued to incorporate all post-closure controls and monitoring activities of the Post-Closure Plan.

2.10.1 Post-Closure Plan
Reserved

2.10.2 Post-Closure Completion

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3.0 COMPLIANCE SCHEDULE [A.R.S. § 49-243(K) (5) and A.A.C. R18-9-A208]

For each compliance schedule item listed below, the permittee shall submit the required information, including a cover letter that lists the compliance schedule items, to the Ground Water Section. A copy of the cover letter must also be submitted to the Water Quality Compliance Section, Data Unit.

TABLE 3.1.1 Hydrology Compliance Schedule

Item Description	Time To Complete	Remarks
Discharge Characterization for Catchment 3		
Discharge Characterization	Within 3 months of discharge to Catchment 3	Submit the laboratory analytical results for discharge characterization of Catchment 3. The permittee shall characterize the discharge in accordance with Section 2.5.1.
Facility Map and Cross Sections		
Revised Facility Map and Cross Sections	Within 3 months of effective date of permit	Submit a revised facility map which depicts only active facilities and facilities to be closed. The revised map must included the individual facilities which make up the in-situ leach area and the impacted storm water ponds located on the former footprint of Tailings #2. The revised cross sections must include: the No. 5 shaft relative to the underground tunnels/drifts, the blocked caved area, other shafts in the immediate area, the TJ Pit, the injection wells, extraction wells, groundwater wells in the Gila Conglomerate, groundwater wells in the bedrock, springs, and seeps.
Flow Diagrams		
Flow Diagrams and Water Balance for active facilities	Within 3 months of effective date of permit	Submit a flow diagram and water balance, which includes revised flow volume and flow rates for each active facility for normal operations and storm water events (100 year/24 hour and back to back storms). The diagram shall provide infiltration and evaporation rates, where appropriate.
Surface Water Flow Diagrams and Delineation of the 100-Year Floodplain		
Surface flow hydrographs and 100-year floodplain	Within 3 months of effective date of permit	Submit the revised surface water diagram, surface water hydrographs, the 100-year flood plain delineation, and the effects of the 100-year flood plain to the facility, since the Tailings Reprocessing Project and the widening of the Bloody Tanks Floodplain has been completed.
Contingency Action Plan		
Contingency and Emergency Response Plan	Within 3months of the effective date of the permit	The permittee shall submit a Contingency Plan for the facilities listed in Section 2 that complies with the requirements of A.A.C. R18-9-A204.
Installation of POC-1		
Installation of POC-1 in the Gila Conglomerate aquifer	Within 3 months of the effective date of the permit	Submit as an amendment to the APP, the geologic and well construction log. The log must include the ADWR registration number, the "as built" cadastral and latitude and longitude coordinates for the well.
Groundwater Well Map		
Groundwater well map for wells within one-half mile of the facility	Within 15 months of effective date of permit	Submit as an amendment to the APP, a topographic map which shows all known water well locations within one-half mile of the facility, and a description of well construction details and well uses. The permittee must evaluate the need for additional POCs to protect points of use. The permittee shall apply for a permit amendment to add POCs.
Setting Alert levels ands Aquifer Quality Limits for POC Wells listed in Table 4.2.1		
Permit Amendment to set ALs and AQLS for wells listed in Table 4.2.1	Within 15 months of the effective date of permit	Submit, as a permit amendment, copies of all laboratory analytical reports, field notes, the QA/QC procedures used in collection and analysis of the samples, and a report including statistical calculation of the ALs and AQLs to the Ground Water Section, as an amendment to the APP. The permittee may request that the Ground Water Section complete the calculations.

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TABLE 3.1.1 Hydrology Compliance Schedule		
Item Description	**Time To Complete**	**Remarks**
Determining BADCT for the In-Situ Leaching Area		
BADCT Demonstration Report for the In-Situ leaching Area	Within 24 months of the effective date of the permit	The permittee shall submit, as an amendment to the APP, a demonstration of BADCT for the In-Situ Leaching Area, in accordance with the *Arizona Mining BADCT Guidance Manual*. The demonstration shall include a detailed groundwater flow and transport modeling effort which will demonstrate BADCT for the in situ leaching area. The report shall discuss the following: purpose of the model, presentation of the hydrogeologic data used, model conceptualization, model calibration, and sensitivity analysis used in the modeling. The BADCT Demonstration Report shall include the proposal of additional POCs, if applicable, in the Gila Conglomerate and bedrock aquifers, and along the Miami Fault to monitor the vertical and horizontal boundaries of the in-situ leaching area. The proposed POC well locations and construction details shall be submitted within the the BADCT Demonstration Report. The POCs installed after the groundwater modeling effort may replace wells permitted as the current POCs listed in Section 2.4.1 for the in-situ leaching area. The BADCT Demonstration Report shall include operational requirements, discharge limitations, monitoring requirements, alert levels and contingency plan requirements for the In-Situ leaching Area. The operational requirements must propose an alert level which assures to maintain an inward hydraulic gradient at the No. 5 Shaft, the extraction wells and the TJ Pit. Each of the wells used to demonstrate an inward hydrologic gradient shall be appropriately screened to monitor groundwater elevation and gradient fluctuations associated with groundwater pumping at the in-situ leaching zone. The BADCT Demonstration Report shall also include the latitude and longitude of the groundwater wells that will be monitored to demonstrate hydrologic capture of the acidic leach solution within the in-situ leaching zone.
Post Audit-BADCT Demonstration for In-Situ leaching Area	Every five (5) years after the initial BADCT Demonstration for the In-Situ Leaching Area	Every five (5) years thereafter, the permittee shall conduct a post audit of the model, and revise the model if significant changes in the water level or mine development are recorded. A report summarizing the original BADCT demonstration and any revisions made to the demonstration shall be submitted to the APP program for review.
POC Installation for the Replacement In-Situ Leaching POC Wells Based on the BADCT Demonstration		
POC Installation for In-Situ Leaching Area	Within 3 months of the approval of the BADCT Demonstration by the GWS-APPDWU	Submit, as an amendment to the APP, within 120 days from the approval of the BADCT Demonstration by the GWS-APPDWU, the geologic and wells construction logs. The log shall include the ADWR registration number, the "as built" cadastral and latitude and longitude coordinates for the well.
Ambient Water Quality Monitoring for Replacement In-Situ Leaching POC Wells Based on the BADCT Demonstration		
Ambient Water Quality	Within 15 months of the approval of the BADCT Demonstration by the GWS-APPDWU.	Each POC well shall be sampled for ambient water quality for eight monthly, consecutive sampling events. The first sample event shall be completed within 12 months of GWS-APPDWU approval of the BADCT Demonstration. Wells shall be sampled for all of the parameters listed in Table 4.2.3.
TABLE 3.1.2 Engineering Compliance Schedule		

Facility Name (#)	Requirements	Time to complete (months after permit issuance, or as noted)[1]	Date Completed
Canyon Tailings (5)	Submit an amendment that includes the BADCT approach, identifying the preferred upgrade and two copies of facility design or as-built drawings and operational details of the preferred upgrade. The preferred upgrade must satisfy the requirements of A.R.S. § 49-243(B) (1) in accordance with the Arizona Mining BADCT Guidance Manual.	12	
Boundary Ore Sump (25)	Submit as an amendment, a request to remove this facility from the list of discharging facilityies in the Permit. The permitte shall inspect and submit a report, including design drawings, to the ADEQ, Aquifer Protection Permits Program, that indicates the facility meets the requirements A.R.S. § 49-250(22) for exemption. The inspection report must confirm that the facility is designed, constructed, operated and regularly maintained so as not to discharge. If determined that additional work is required to satisfy the exemption requirements, the permittee shall implement the required action and ADEQ shall amend the permit to remove this facility	12	
Catchment No.3 (24)	Submit an amendment that includes the BADCT approach, identifying the preferred upgrade and two copies of facility design or as-built drawings and operational details of the preferred upgrade. The preferred upgrade must satisfy the requirements of A.R.S. § 49-243(B) (1) in accordance with the Arizona Mining BADCT Guidance Manual.	12	
Spill Containment Pond No. 3 (9)	Submit an amendment to the APP, a closure/post closure plan, identifying a method for facility closure, including a site investigation plan. The closure/post closure plan shall meet the requirements of A.R.S. § 49-252 and A.A.C. 18-9-A209 (B) and (C). Include 2 copies of the scope of work plan for the site investigation and 2 copies of the closure/post-closure plan with design details for closure.	12	
PLS Pond (3)	Submit an amendment to the APP, a demonstration that the PLS Pond meets New Facility BADCT.	12	
Remedial Action Plan (RAP)	Submit to the ADEQ Aquifer Protection Permits Program a copy of the approved WQARF Final Remediation Action Plan (RAP).	12	

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TABLE 3.1.2 Engineering Compliance Schedule			
Facility Name (#)	**Requirements**	**Time to complete (months after permit issuance, or as noted)**[1]	**Date Completed**
WQARF Facilities: No. 2 Tailings Hydraulic Mining Area Sub-station Pond Filter Plant Pond No. 11 Shaft Pond	Submit as an amendment to the APP, a closure/post-closure plan, identifying a method for facility closure including: Relevant site investigation information from WQARF studies and a closure design to include a cost estimate and schedule. The closure/post-closure plan shall meet the requirements of A.R.S. 49-252 and A.A.C. R18-9-A209(B) and (C).	Within 12 months of WQARF cleanup	

Notes: Existing Facilities BADCT Demonstration:

Step 1 – Identify current DCTs and site factors
Step 2 – Determine aquifer loading
Step 3 – Identify technically feasible alternative DCTs
Step 4 – Weigh cost vs. discharge reduction for each alternative system to arrive at BADCT

For additional details on existing facilities BADCT demonstration, refer to Arizona Mining BADCT Guidance Manual.

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4.0 TABLES OF BADCT and MONITORING REQUIREMENTS

4.1 PRE-OPERATIONAL MONITORING (or CONSTRUCTION REQUIREMENTS)

TABLE 4.1.1 Permitted Facilities and BADCT

Facility Name (#)	Latitude/Longitude	Facility BADCT [A,B]
CANYON TAILINGS BASIN – Tailings Impoundments		
Canyon Tailings Impoundment (5) In-Situ Leach Area (11)	33^0 24' 23.1" N 110^0 52' 15.5" W 33º 24' 25.4" N 110º 52' 29.8" W	Facility BADCT shall be determined by the Compliance Schedule (see Section 3.0 Compliance Schedule).
SX/EW BASIN – Non-stormwater Impoundments		
SX/EW Plant Spill Containment Pond (2)	33^0 24' 9.4" N 110^0 52' 6.2" W	**Individual BADCT:** Facility is an existing non-stormwater impoundment, with a collection vault located on the southwest corner of the spill containment pond. The bottom of the impoundment is lined with a 4-inch thick layer of gunnite. The facility has been upgraded using an 80-mil HDPE liner overlying a minimum of 8-ounce non-woven geotextile fabric emplaced between the gunnite-lined surface and the HDPE liner. The liner is secured in an engineered anchor trench. The upgraded facility is designed with an emergency overflow stainless steel pipe to direct flow, by gravity, to the 320 Adit connecting to the In-situ Leaching Area. Surface water run-off is diverted away from the facility. The facility has fluid storage capacity of 1.65 acre-feet with a maximum depth of 18 feet. Accumulated fluid in the impoundment shall be pumped out as soon as practical, but no later than thirty (30) days after the process upset event. The facility shall be operated with a minimum of 1 foot of freeboard.
ADMINISTRATION BASIN – Non-stormwater Impoundments		
Catchment No. 3 (24)	33^0 24' 9.1" N 110^0 52' 09.7" W	Facility BADCT shall be determined by the Compliance Schedule (see Section 3.0 Compliance Schedule).
PIPELINE CORRIDOR – Non-stormwater Impoundments		
Spill Containment Pond No. 1 Spill Containment Pond No. 4 Spill Containment Pond No. 5 (9)	33^0 24' 49.1" N 110^0 52' 5.6" W 33^0 23' 39.1.1" N 110^0 55' 10.0" W 33^0 24' 49.1" N 110^0 52' 5.6" W	**Individual BADCT:** The Spill Containment Ponds are non-stormwater impoundments lined with 60-mil HDPE liners. The spill containment ponds are designed to serve as retention ponds in the event of operational leaks or upsets in the pipeline corridor. The pipeline corridor consists of three pipelines delivering tailings slurry and/or solutions at a maximum rate of 3,000 gpm between the Miami Unit and the Copper Cities property. The storage capacity and corresponding depth of each of the spill containment ponds is tabulated below.

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TABLE 4.1.1 Permitted Facilities and BADCT				
Facility Name (#)	**Latitude/Longitude**	**Facility BADCT** [A,B]		
New Facilities		Spill Containment Pond	Capacity (acre-feet)	Depth (feet)
		No. 1	0.9	9
		No. 4	1.35	9
		No. 5	1.14	9
		Accumulated fluid in the impoundments shall be pumped out as soon as practical, but no later than thirty (30) days after the process upset event. The facilities shall be operated with a minimum of 1foot of freeboard.		
PLS Pond (3)	33^0 24' 20.1" N 110^0 52' 19.4" W	Facility is required to meet New Facility BADCT. BADCT demonstration will be required as a compliance requirement of this permit.		

Abbreviations:

BADCT – Best Available Demonstrated Control Technology
HDPE – High Density Polyethylene

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4.2 COMPLIANCE (or OPERATIONAL) MONITORING

TABLE 4.2.1 Required Inspections and Operational Monitoring	
Facility Name (#)	**Operational Requirements**
CANYON TAILINGS BASIN – Non-stormwater Impoundment; Unlined	
Canyon Tailings Impoundment (5)	**Monthly:** Visually inspect and maintain a minimum of 2 feet of freeboard. **Quarterly and following precipitation events measuring at least 1-inch in a 24-hour period:** (Precipitation to be measured based on readings obtained from the mine weather station used for such measurements) Check and take appropriate action for any evidence of: -impairment of embankment integrity; -excessive erosion in conveyances and diversions; -accumulation of debris in conveyances and diversions; -impairment of access. **Annually:** Remove excess sediments/sludge form the impoundment, conveyance and diversions as needed to maintain at least 80 percent of designed capacity.
CANYON TAILINGS BASIN – Process Solution Impoundment: lined	
PLS Pond (3) New Facility	**Daily:** Visually inspect and maintain a minimum of 1 foot of freeboard. **Quarterly and following precipitation events measuring at least 1-inch in a 24-hour period:** (Precipitation to be measured based on readings obtained from the mine weather station used for such measurements) Check and take appropriate action for any evidence of : -perforated or cut or damaged liner and impairment of anchor trench integrity; -impairment of embankment integrity; -excessive erosion in conveyances and diversions; -accumulation of debris in conveyances and diversions; -impairment of access; At pump locations, inspect pumps, valves and structures for pump operation and structural integrity. **Annually:** Remove excess sediments/sludge form the impoundment, conveyance and diversions as needed to maintain at least 80 percent of designed capacity.
SX-EW BASIN – Non-stormwater Impoundment; Lined	

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TABLE 4.2.1 Required Inspections and Operational Monitoring	
Facility Name (#)	**Operational Requirements**
SX-EW Plant Spill Containment Pond (2)	**Monthly:** Visually inspect and maintain a minimum of 1 foot of freeboard. **Quarterly and following precipitation events measuring at least 1-inch in a 24-hour period:** (Precipitation to be measured based on readings obtained from the mine weather station used for such measurements) Check and take appropriate action for any evidence of : -perforated or cut or damaged liner and impairment of anchor trench integrity; -impairment of embankment integrity; -excessive erosion in conveyances and diversions; -accumulation of debris in conveyances and diversions; -impairment of access; At pump locations, inspect pumps, valves and structures for pump operation and structural integrity. **Annually:** Remove excess sediments/sludge from the impoundment, conveyance and diversions as needed to maintain at least 80 percent of designed capacity.
IN-SITU LEACHING AREA BASIN – RaffinateInjection /Process Solution Impoundments	
In-Situ Leaching Area (11)	**Daily:** Check and take appropriate action for any evidence of: -pump equipment breakdown; -malfunctioning of the flow monitoring devices. Check and take appropriate action when amount of fluid injected exceeds the amount of fluid removed during a three consecutive day period. **Monthly:** At pump location, inspect pumps and structures for pump operation and structural integrity.
Boundary Ore Sump(Raffinate Solution Impoundment) (25)	**Daily:** Visually inspect and maintain a minimum of 2 feet of freeboard; **Monthly and following precipitation events measuring at least 1-inch in a 24-hour period:** (Precipitation to be measured based on readings obtained from the mine weather station used for such measurements) Check and take appropriate action for any evidence of : -seepage, surface cracks, or unusual settlement of the concrete vessel; -excessive erosion in conveyances and diversions; -accumulation of debris in conveyances and diversions; -impairment of access; At pump locations, inspect pumps and structures for pump operation and structural integrity. **Annually:** Remove excess sediments/sludge from the impoundment, conveyance and diversions as needed to maintain at least 80 percent of designed capacity.
No. 5 Shaft (21)	**Daily:** Check and take appropriate action for any evidence of:

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TABLE 4.2.1 Required Inspections and Operational Monitoring	
Facility Name (#)	**Operational Requirements**
	-pump equipment breakdown; -malfunctioning of the flow monitoring devices. **Monthly:** At pump location, inspect pumps and structures for pump operation and structural integrity.
ADMINISTRATION BASIN – Non-stormwater Impoundment; Unlined	
Catchment No. 3 (24)	**Monthly:** Check and take appropriate action for any evidence of: -impairment of embankment integrity; -excessive erosion in conveyances and diversions; -accumulation of debris in conveyances and diversions; -impairment of access; **Annually:** -Remove access sediments/sludge from the impoundment and outlet channel as needed to maintain at east 80 percent of designed capacity.
PIPELINE CORRIDOR – Non-stormwater Impoundment; Unlined	
Spill Containment Pond No. 1 Spill Containment Pond No. 2 Spill Containment Pond No. 4 Spill Containment Pond No. 5	**Quarterly and following precipitation events measuring at least 1-inch in a 24-hour period:** (Precipitation to be measured based on readings obtained from the mine weather station used for such measurements) Check and take appropriate action for any evidence of : -perforated, cut or damaged liner and impairment of anchor trench integrity at Spill Containment Ponds Nos.1,4 and 5 -impairment of embankment integrity; -excessive erosion in conveyances and diversions; -accumulation of debris in conveyances and diversions; -impairment of access. Visually inspect and take appropriate action if there is any evidence of seepage or cracks that affect the structural integrity of the concrete-lined Spill Containment Pond No. 2. **Annually:** -Remove access sediments/sludge from the impoundments as needed to maintain at least 80percent of designed capacity.

TABLE 4.2.2 List of Parameters for Discharge Characterization		
pH - field & lab (SU)	Total Coliform[2] (CFU or MPN)[3]	Copper

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TABLE 4.2.2 List of Parameters for Discharge Characterization		
Specific Conductance - field and lab (µmhos/cm)	Fecal Coliform (CFU or MPN) [3]	Lead
Total Dissolved Solids - field and lab	Magnesium	Manganese
Total Alkalinity	Potassium	Mercury
Carbonate	Sodium	Nickel
Bicarbonate	Iron	Selenium
Calcium	Aluminum	Thallium
Sulfate	Antimony	Zinc
Chloride	Arsenic	Total Cyanide
Fluoride	Barium	TPH
Nitrate	Beryllium	Benzene
Nitrite	Cadmium	Toluene
Total Nitrogen[1]	Chromium	Ethylbenzene
Total Kjeldahl Nitrogen (TKN)	Cobalt	Total Xylenes

1. Total Nitrogen is equal to nitrate as N plus nitrite as N plus TKN.
2. A positive result for total coliform may be verified with an analysis for fecal coliform.
3. CFU= Colony Forming Units per 100 mL, MPN=Most Probable Number per 100 mL.

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TABLE 4.2.3 List of Parameters for Ambient Groundwater Monitoring for All Point of Compliance (POC) Wells		
Depth to Water Level (ft.)	Total Kjeldahl Nitrogen[5] (TKN)	Manganese

Water Level Elevation (ft amsl)	Total Coliform[2, 5] (CFU or MPN)[3]	Mercury
Temperature - field (F^o)	Magnesium	Nickel
pH - field & lab (SU)	Potassium	Selenium
Specific Conductance - field and lab (µmhos/cm)	Sodium	Thallium
Total Dissolved Solids - field and lab	Iron	Zinc
Total Alkalinity	Aluminum	Total Cyanide
Carbonate	Antimony	Gross Alpha Particle Activity [4] (pCi/L)
Bicarbonate	Arsenic	Radium 226 (pCi/L)
Calcium	Barium	Radium 228 (pCi/L)
Sulfate	Beryllium	Uranium
Chloride	Cadmium	TPH
Fluoride	Chromium	Benzene
Nitrate	Cobalt	Toluene
Nitrite	Copper	Ethylbenzene
Total Nitrogen[1, 5]	Lead	Total Xylenes

1. Total Nitrogen is equal to nitrate as N plus nitrite as N plus TKN.
2. A positive result for total coliform may be verified with an analysis for fecal coliform.
3. CFU= Colony Forming Units per 100 mL, MPN=Most Probable Number per 100 mL.
4. If Gross Alpha Particle Activity is greater than 15 pCi/L, the permittee shall test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha activity, including radium 226, minus radon and total uranium (the sum of the uranium 238, uranium 235 and uranium 234 isotopes).
5. Analysis required for this constituent at POC-1.

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TABLE 4.2.4 Quarterly Compliance Groundwater Monitoring Requirements for POC Wells

PARAMETER	POC-1 AQL	AL	MU-955 AQL	AL	MU-962 AQL	AL	MU-957 AQL	AL
Depth to Water (in feet)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation (in feet amsl)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field pH (S.U.)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field Specific Conductance (µmhos/cm)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature Field (F)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Fluoride	4.0	3.2	4.0	3.2	4.0	3.2	4.0	3.2
Nitrate	10.0	8.0	10.0	8.0	10.0	8.0	10.0	8.0
Total Nitrogen[1]	Monitor	Monitor	NR	NR	NR	NR	NR	NR
Total Kjeldahl Nitrogen (TKN)	Monitor	Monitor	NR	NR	NR	NR	NR	NR
Total Coliform (CFU or MPN) [2]	Absence[3]	Absence	NR	NR	NR	NR	NR	NR
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Antimony	0.006	0.0048	0.006	0.0048	0.006	0.0048	0.006	0.0048
Arsenic	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
Barium	2.0	1.6	2.0	1.6	2.0	1.6	2.0	1.6
Beryllium	0.004	0.0032	0.004	0.0032	0.004	0.0032	0.004	0.0032
Cadmium	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
Chromium	0.1	0.08	0.1	0.08	0.1	0.08	0.1	0.08
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
Mercury	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016
Nickel	0.1	0.08	0.1	0.08	0.1	0.08	0.1	0.08
Selenium	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
Thallium	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

1. Total Nitrogen is equal to nitrate as N plus nitrite as N plus TKN.
2. CFU= Colony Forming Units per 100 ml, MPN=Most Probable Number per 100 ml.
3. A positive result for total coliform may be verified with an analysis for fecal coliform. A positive result for fecal coliform shall be considered an exceedance of the AQL for total coliform.

Monitor = Analysis is required but an AQL and/or AL is not established in the permit.
AQL = Aquifer Quality Limit.
AL = Alert Level.
NR = Analysis is not required.

All concentrations in milligrams per liter (mg/L) unless otherwise noted.
Metals shall be analyzed as dissolved metals.

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TABLE 4.2.5. Biennial Compliance Groundwater Monitoring Requirements for the POC wells								
PARAMETER	**POC-1 AQL**	**AL**	**MU-955 AQL**	**AL**	**MU-962 AQL**	**AL**	**MU-957 AQL**	**AL**
Depth to Water (in feet)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation (in feet amsl)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field pH (S.U.)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field Specific Conductance (µmhos/cm)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature Field (F)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Alkalinity	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Carbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Chloride	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Calcium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Magnesium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Potassium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Sodium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	10.0	8.0	10.0	8.0	10.0	8.0	10.0	8.0
Total Nitrogen[1]	Monitor	Monitor	NR	NR	NR	NR	NR	NR
Total Kjeldahl Nitrogen (TKN)	Monitor	Monitor	NR	NR	NR	NR	NR	NR
Total Coliform (CFU or MPN)[2]	Absence[3]	Absence	NR	NR	NR	NR	NR	NR
Cyanide	0.2	0.16	0.2	0.16	0.2	0.16	0.2	0.16
Fluoride	4.0	3.2	4.0	3.2	4.0	3.2	4.0	3.2
Aluminum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Antimony	0.006	0.0048	0.006	0.0048	0.006	0.0048	0.006	0.0048
Arsenic	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
Barium	2.0	1.6	2.0	1.6	2.0	1.6	2.0	1.6
Beryllium	0.004	0.0032	0.004	0.0032	0.004	0.0032	0.004	0.0032
Cadmium	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
Chromium	0.1	0.08	0.1	0.08	0.1	0.08	0.1	0.08
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
Mercury	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016
Nickel	0.1	0.08	0.1	0.08	0.1	0.08	0.1	0.08
Selenium	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
Thallium	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

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TABLE 4.2.5. Biennial Compliance Groundwater Monitoring Requirements for the POC wells								
PARAMETER	**POC-1 AQL**	**AL**	**MU-955 AQL**	**AL**	**MU-962 AQL**	**AL**	**MU-957 AQL**	**AL**
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Gross Alpha Particle Activity (pCi/L)[4]	15	12	15	12	15	12	15	12
Radium 226 + Radium 228 (pCi/L)	5.0	4.0	5.0	4.0	5.0	4.0	5.0	4.0
Uranium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
TPH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Benzene	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
Toluene	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8
Ethylbenzene	0.7	0.56	0.7	0.56	0.7	0.56	0.7	0.56
Total Xylenes	10.0	8.0.	10.0	8.0.	10.0	8.0.	10.0	8.0.

1. Total Nitrogen is equal to nitrate as N plus nitrite as N plus TKN.
2. CFU= Colony Forming Units per 100 ml, MPN=Most Probable Number per 100 ml.
3. A positive result for total coliform may be verified with an analysis for fecal coliform. A positive result for fecal coliform shall be considered an exceedance of the AQL for total coliform.
4. If the gross alpha particle activity is greater than 15 pCi/L, then test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha particle activity including radium 226, minus radon and total uranium (the sum of the uranium 238, 235 and 234 isotopes).

Monitor = Analysis is required but an AQL and/or AL is not established in the permit.
AQL = Aquifer Quality Limit.
AL = Alert Level.
NR = Analysis not required.
All concentrations in milligrams per liter (mg/L) except where noted.
Metals shall be analyzed as dissolved metals.

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5.0 REFERENCES AND PERTINENT INFORMATION

The terms and conditions set forth in this permit have been developed based upon the information contained in the following, which are on file with the Department:

1. APP Application dated November 4, 1996.
2. Public Notice, dated _____.
3. Public Hearing, dated _____.
4. Responsiveness Summary, dated _____.

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6.0 NOTIFICATION PROVISIONS

6.1 Annual Registration Fees

The permittee is notified of the obligation to pay an Annual Registration Fee to ADEQ. The Annual Registration Fee is based upon the amount of daily influent or discharge of pollutants in gallons per day as established by A.R.S. § 49-242(D).

6.2 Duty to Comply [A.R.S. §§ 49-221 through 49-263]

The permittee is notified of the obligation to comply with all conditions of this permit and all applicable provisions of Title 49, Chapter 2, Articles 1, 2 and 3 of the Arizona Revised Statutes, Title 18, Chapter 9, Articles 1 through 4, and Title 18, Chapter 11, Article 4 of the Arizona Administrative Code. Any permit non-compliance constitutes a violation and is grounds for an enforcement action pursuant to Title 49, Chapter 2, Article 4 or permit amendment, suspension, or revocation.

6.3 Duty to Provide Information [A.R.S. §§ 49-243(K)(2) and 49-243(K)(8)]

The permittee shall furnish to the Director, or an authorized representative, within a time specified, any information which the Director may request to determine whether cause exists for amending or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

6.4 Compliance with Aquifer Water Quality Standards [A.R.S. §§ 49-243(B) (2) and 49-243(B) (3)]

The permittee shall not cause or contribute to a violation of an aquifer water quality standard at the applicable point of compliance for the facility. Where, at the time of issuance of the permit, an aquifer already exceeds an aquifer water quality standard for a pollutant, the permittee shall not discharge that pollutant so as to further degrade, at the applicable point of compliance for the facility, the water quality of any aquifer for that pollutant.

6.5 Technical and Financial Capability

[A.R.S. §§ 49-243(K) (8) and 49-243(N) and A.A.C. R18-9-A202 (B) and R18-9-A203 (E) and (F)]

The permittee shall have and maintain the technical and financial capability necessary to fully carry out the terms and conditions of this permit. Any bond, insurance policy, trust fund, or other financial assurance mechanism provided as a demonstration of financial capability in the permit application, pursuant to A.A.C. R18-9-A203(D), shall be in effect prior to any discharge authorized by this permit and shall remain in effect for the duration of the permit.

6.6 Reporting of Bankruptcy or Environmental Enforcement [A.A.C. R18-9-A207(C)]

The permittee shall notify the Director within five days after the occurrence of any one of the following:

1. The filing of bankruptcy by the permittee.
2. The entry of any order or judgment not issued by the Director against the permittee for the enforcement of any environmental protection statute or rule.

6.7 Monitoring and Records [A.R.S. § 49-243(K) (8) and A.A.C. R18-9-A206]

The permittee shall conduct any monitoring activity necessary to assure compliance with this permit, with the applicable water quality standards established pursuant to A.R.S. §§ 49-221 and 49-223 and §§ 49-241 through 49-252.

6.8 Inspection and Entry [A.R.S. §§ 41-1009, 49-203(B) and 49-243(K) (8)]

In accordance with A.R.S. §§ 41-1009 and 49-203(B), the permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to enter and inspect the facility as reasonably necessary to ensure compliance with Title 49, Chapter 2, Article 3 of the Arizona Revised Statutes, and Title 18, Chapter 9, Articles 1 through 4 of the Arizona Administrative Code and the terms and conditions of this permit.

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6.9 Duty to Modify [A.R.S. § 49-243(K) (8) and A.A.C. R18-9-A211]
The permittee shall apply for and receive a written amendment before deviating from any of the designs or operational practices specified by this permit.

6.10 Permit Action: Amendment, Transfer, Suspension & Revocation
[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]
This permit may be amended, transferred, renewed, or revoked for cause, under the rules of the Department.

The permittee shall notify the Ground Water Section in writing within 15 days after any change in the owner or operator of the facility. The notification shall state the permit number, the name of the facility, the date of property transfer, and the name, address, and phone number where the new owner or operator can be reached. The operator shall advise the new owner or operators of the terms of this permit and the need for permit transfer in accordance with the rules.

7.0 ADDITIONAL PERMIT CONDITIONS

7.1 Other Information [A.R.S. § 49-243(K) (8)]
Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall promptly submit the correct facts or information.

7.2 Severability
[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]
The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby. The filing of a request by the permittee for a permit action does not stay or suspend the effectiveness of any existing permit condition.

7.3 Permit Transfer
This permit may not be transferred to any other person except after notice to and approval of the transfer by the Department. No transfer shall be approved until the applicant complies with all transfer requirements as specified in A.A.C. R18-9-A212(B) and (C).

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